

REMARKS

Reconsideration of the rejections set forth in the Office Action is respectfully requested. By this amendment, claims 1, 10, and 15 have been amended. Currently, claims 1, 4, 6-10 and 15-22 are pending in this application.

Rejection under 35 USC 101

Claim 10 was rejected under 35 USC 101 as being directed to non-statutory subject matter. Specifically, the Examiner has taken the position that a protocol data unit is a data structure, that a data structure per-se is non-statutory, and that “merely putting a data structure on a computer readable medium does not make it statutory.” (Office Action at page 3, lines 1-6).

This rejection is directly in conflict with a clear directive from the Court of Appeals for the Federal Circuit, See In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) and also is directly in conflict with the MPEP, (MPEP 2106.01). Moreover, claims to the patent office are commonly issued for data structures embodied on a computer-readable medium. Indeed, a brief search at the USPTO web portal revealed that 9939 issued patents contain claims including the phrase “data structure.” As a random example, claim 23 of U.S. Patent No. 7,260,631 recites: “A data list ***data structure*** embodied on a computer readable medium...” There are numerous other examples where the USPTO has issued claims directed to a data structure contained in a computer readable medium. Thus, the Examiner’s position in this regard is directly contrary to controlling law and US PTO procedure.

Independent claim 10 recites a protocol data unit data structure stored in a tangible computer readable medium. According to controlling precedent and the MPEP, this in-and-of itself is sufficient to render claim 10 statutory.

Additionally, claim 10 recites that the protocol data unit data structure includes a destination MAC address having a plurality of fields, and that each of the plurality of fields contains a code to be used by a switch on a network independent of the other fields of the destination MAC address to identify an output port on the switch without performing a table lookup operation to enable the switch on the network to make a forwarding decision for the protocol data unit. This language specifies the functionality to be imparted to the switch when the switch reads the protocol data unit or the portion (particular field) of the MAC address in connection with making a switching decision. Thus, in addition to reciting that the data structure

is contained on a computer readable medium, applicants describe the functionality imparted by the various fields of the data structure when the data structure is read by a network switch.

Applicants respectfully submit that the Examiner erred by rejecting claim 10 under 35 USC 101. The Examiner stated (on page 2 of the Office Action) that “The claim is claiming a data structure which is a logical arrangement of bytes thus is an abstract idea.” This is incorrect. The claim claims a data structure stored on a computer readable medium, which is not an abstract idea but rather a physical thing. To clarify that the claim is directed to a physical thing (computer readable medium) containing the data structure rather than simply to the data structure itself, applicants have reversed the order of the preamble to recite “A computer readable medium having embodied therein a protocol data unit data structure stored in a tangible computer readable medium.” In view of this amendment the Examiner is requested to withdraw the rejection.

Further, the Examiner stated (page 2 of the office action) that “The data structure sitting on a computer readable medium cannot produce any useful result until it is used to carry out a useful task.” The same thing could be said about computer software. Computer software stored on a computer readable medium is completely useless unless loaded into a processor. However, it is well settled that computer software stored on a computer readable medium is patentable under 35 USC 101 because, when loaded into the processor, the computer software causes a physical change in the processor to cause the processor to perform particular functions specified by the code contained in the software and embodied on the disk. Claim 10 follows this format and specifies the types of fields contained in the data structure as well as the functions those fields cause to occur when the data structure is read by a switch. The Examiner’s statement that the data structure by itself does not produce any useful result is not relevant. Claim 10 recites that “each of the plurality of fields containing a code to be used by a switch on a network independent of the other fields of the destination MAC Address to identify an output port on the switch without performing a table lookup operation to enable the switch on the network to make a forwarding decision for the protocol data unit.” This recites the function that is enabled by the data structure when the data structure or a portion of the data structure is read by a switch. Claim 10 recites the useful result that is obtained when the data structure is read from the computer readable medium. Hence, applicants respectfully submit that claim 10 is statutory.

Rejection under 35 USC 102

Claims 15, 16, and 19 were rejected under 35 USC 102 as anticipated by Pearce et al (U.S. Patent No. 6,556,574). This rejection is respectfully traversed in view of the amendments to the claims and the following arguments.

This application teaches a novel way of using MAC addresses to enable switches to read a portion of a frame's MAC address and use that portion, by itself, to make a forwarding decision for the frame. Traditionally switches have read the entire MAC address and used the entire MAC address to perform a switching function. Applicants proposed to divide the MAC address into fields and enable each switch to read a different portion of the MAC address.

Each of the references cited by the Examiner shows the entire MAC address and none of the references shows the MAC address being divided into fields. In the rejection of claim 15, for example, the Examiner has pointed to Fig. 6C of Pearce which shows a conventional MAC address. As shown in this figure, a conventional MAC address has six bytes. Where the MAC address is locally assigned (as opposed to globally unique) the first byte contains both a global/local bit and a group/individual bit. It appears that the Examiner has interpreted these as being "fields". Likewise, the MAC address format is logically broken into six 8-bit bytes which the Examiner appears to have interpreted to be "fields". However, Pearce does not teach or suggest that a particular switch should read only one of the bytes of the MAC address or that a particular switch should only read the local bit or multicast bit when making a forwarding decision.

Applicants have amended claim 15 to narrow the claim to clarify that the first field spans at least a portion of the second through sixth octets of the MAC address. Further, claim 15 recites that the first field contains a smaller number of bits than a total number of bits contained in the second through sixth octets of the destination MAC address. Collectively, these two limitations of claim 15 require a first field to be formed from (1) some of the bytes contained in the second through sixth octets; and (2) fewer than all of the bits contained in the second through sixth octets. Pearce does not teach or suggest using a field of this nature, since Pearce teaches the standard use of a MAC address in which all of the bits of the MAC address are used to determine how to forward the frame on the network.

Further, claim 15 has been amended to recite that the first value contained in the first field (which is contained in some of the bits of the second through sixth octets but not all of the

bits of the second through sixth octets) contains first output interface information usable by a first switch without reference to information contained in the second through sixth octets outside of the first field to identify a first output interface for transmission of frames containing the first value in the first field of said MAC address. Pearce does not teach that a portion of the MAC frame should independently have local significance to a particular switch. Accordingly, these claim amendments clearly differentiate claim 15 from what is taught by Pearce.

Rejection under 35 USC 102 and 35 USC 103

Claims 1, 3, 5, 6, and 10 were rejected under 35 USC 103 as unpatentable over Schaub (U.S. Patent No. 7,190,695) in view of Sandstrom (U.S. Patent No. 7,254,138). In connection with this rejection, the Examiner stated that Schaub taught “reading a field within the MAC address” because Schaub taught reading a destination address which, the Examiner contends, has fewer bits than the total number of bits of the MAC address. This rejection is respectfully traversed in view of the amendments to the claims and the following arguments.

As noted above, applicants are focused on a situation where a standard MAC address has fields that are smaller than a typical destination address so that several different switches can use different portions of a standard MAC address to each individually determine how to forward the frame by reading only their assigned portion of the MAC address. Schaub teaches a system that reads the entire destination address. In this application, by contrast, the switches read smaller fields within the destination address.

To clarify that applicants are looking at a sub-field within a destination address contained in an MAC address, applicants have amended claim 1 to recite that the method includes the step of receiving a frame at a first switch, the frame having an Ethernet Media Access Control (MAC) header including at least one 6 byte MAC address. Claim 1 further recites that the 6 byte MAC address including an address portion which is divided into a plurality of sub-fields. The Examiner indicated that the MAC address in Schaub includes a destination address which has fewer bits than the entire MAC address. This amendment is intended to address this concept, because claim 1 now recites that the 6 byte MAC address includes an address portion and then recites that the address portion is divided into a plurality of sub-fields. Schaub does not teach or suggest that the destination address should be divided into multiple pieces.

Claim 1 further recites that at least two of the sub-fields of the address portion are greater than 2 bits in length and shorter than 5 bytes in length. This is intended to distinguish the claimed fields from the group/individual bit and the global/local bits of a standard MAC header which are each 1 bit in length.

Claim 1 further recites that each sub-field has local significance to a separate switch on the communication network such that each separate switch will read only one of the plurality of sub-fields of the MAC address when making a switching decision for the frame. None of the references teach that the address portion should be divided into a plurality of sub-fields, and that a particular switch will read only one of the plurality of sub-fields when making a switching decision for the frame.

The second method step of claim 1 has further been amended to emphasize this point, and has been amended to recite that the method includes the step of extracting, by the first switch, frame contained destination information from one of the plurality of sub-fields of the address portion of the MAC address associated with the received frame by reading only one of the sub-fields within the MAC address. None of the references teach this step. Accordingly, applicants respectfully request that the rejection of claim 1 be withdrawn.

The dependent claims not specifically addressed herein are patentable for at least the same reasons set forth in connection with their respective independent claim.

Conclusion

Applicants respectfully submit that this application is in condition for allowance and an action to this effect is respectfully requested. If there are any questions or concerns regarding the amendments or these remarks, the Examiner is requested to telephone the undersigned at the telephone number listed below.

No fees are due in connection with this filing. If any fees are due in connection with this filing, the Commissioner is hereby authorized to charge payment of the fees associated with this communication or credit any overpayment to Deposit Account No. 141315 (Ref: 14715ROUS03U).

Respectfully Submitted

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